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Introduction

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These Annual Indexes are edited consolidations of the indexes to the individual issues of *Scientific and Technical Aerospace Reports (STAR)* for the calendar year 1969 (Volume 7, Numbers 1 through 24). For the convenience of the user, they are divided into four sections, each bound separately. Sections I and II contain the Subject Index. Section III contains the Personal Author Index. Section IV contains a Corporate Source Index, a Contract Number Index, a Report/Accession Number Index, and an Accession Number/Report Index. The Annual Indexes supersede the semimonthly and quarterly indexes previously issued during 1968.

Each entry in these indexes includes a group of identifying numbers in the following form: 06 p 0950 N69-16996. The first two digits (06) identify the issue in which the document was announced. The "p" stands for page number, and the four digits that follow (0950) refer to the page number, in the designated issue, on which the abstract of the document appears. The next group of numbers (N69-16996) is the NASA Accession Number, a unique identification number assigned by NASA to each document that was acquired, indexed, and announced in *STAR* during the year.

In addition to these identifying numbers, each entry in the Subject Index contains a Notation of Content, a brief description of the contents of the document; each entry in the Personal Author and Corporate Source Indexes contains the exact title of the document.

At the beginning of each index in this cumulation, a typical listing is illustrated with each of its elements identified to assist the reader in using the different types of index entries.

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Subject terms in this cumulative index are arranged alphabetically, and are supplemented with cross-references which are intended to serve as directions that will enable the user to modify, enlarge, or narrow his search in accordance with his specific interests. Two types of cross-references are used:

1. Use (U) references indicate that the subject term is not "postable", i.e., not a valid term, and that the following term or terms are used instead. For example,

   COLUMBIUM
   U NIOBIUM
   ANNULAR JETS
   U ANNULAR FLOW
   U JET FLOW

2. Narrower Term (NT) references indicate that the subject terms following the NT notation represent more specific concepts than the terms used. For example,

   EMISSION
   NT ELECTRON EMISSION
   NT NEUTRON EMISSION
   NT THERMAL EMISSION

Finally, a searcher should use the notations of content in the Index to narrow further his quest for particular items. This is because subject terms can readily include more than one class of document. For example:

CATHODES

Cesium plasma cathodes as sources of high intensity electron beams.

Cathode material testing in electrochemical half cells.

illustrates a case where two references on different topics are listed under the same subject term.

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NT KAOLINITE
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NIGHT AIRGLOW
U AIRGLOW

NIGHT E LAYER
U E REGION

NIGHT F LAYER
U F REGION

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NT CELLULOSE NITRATE
NT DINITRATES
NT NITROGLYCERIN
NT PETN
NT POTASSIUM NITRATES
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NT BERYLLIUM NITRIDES
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Zone melting of acetonitrile in sealed vessels
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Insertion reactions of isonitrile metal complexes as catalysts
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NT NITROBENZENES
NT NITROGLYCERIN
NT TRINITROTOLUENE

Detonation attenuation in liquid explosive mixtures of tetranitromethane and ethyl iodide
[AD-681292] 09 p1610 N69-20219

Electron paramagnetic resonance study of radicals formed by radiolysis of nitroalkanes and their solutions, chromatographic analysis of radiolysis products of nitromethane
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Oriented composites by drastic freezing of camphor-nitroaniline system with strong fiber-former
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Hydrogen bond and frequencies of valence oscillations of N- H- and nitrogen dioxide groups of nitroanilines
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Spin density and electron paramagnetic resonance of nitro substituted radicals
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Chemical properties of bicyclic Mannich bases derived from ethylene dinitroamines, formaldehyde, and some primary amines
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NT TRINITROTOLUENE

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NITROGEN
NT LIQUID NITROGEN

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[NASA-SP-3046] 05 p0814 N69-16098

Feasibility of measuring static temperature of flowing nitrogen in hypersonic wind tunnel
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Relative populations of second positive nitrogen band system vibrations in aurorae at various latitudes
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Dynamic method to determine thermal conductivities and Prandtl numbers of carbon dioxide-nitrogen system with mathematical model derived to treat measured data
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Determination of nitrogen in titanium carbide by Dumas technique
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Excitation of second positive system of molecular nitrogen by fast electrons
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Angular distribution of proton polarization from isotopic carbon-nitrogen reaction
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Helium and nitrogen content of lower thermosphere above Ft. Churchill, Canada, measured with rocket-borne quadrupole mass filter
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Electron microscopy study of recrystallization in chromium-manganese-nitrogen austenitic steel
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Nitrogen loss in excited state originating in ionic collisions
[SC-T-69-1007] 14 p2602 N69-27478

Feasible design for high pressure, high temperature standard air heaters
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Comparison of determination methods for nitrogen in titanium carbide
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Reactions of nitrogen and carbon with uranium compounds
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Nitrogen and hydrogen hot gases used for JPL 43 inch diameter shock tunnel
[NASA-CR-101634] 16 p2932 N69-29586

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17 p3231 N69-30617

Nonanalytic behavior at critical point in vapor pressure formula with data of nitrogen and oxygen
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Nitrogen relation to dislocation configurations in 20Cr-20Ni stainless steels deformed in tension
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High temperature permeation of zirconia microspheres by nitrogen and oxygen
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Effects of two-gas artificial atmosphere in manned spacecraft
20 p3729 N69-34838

Hot nitrogen gas for heating thermoluminescent dosimeters
20 p3796 N69-34939

Thermodynamic properties of carbon dioxide and nitrogen behind shock wave interacting with wedge
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Spectroscopic analysis of hot nitrogen emission spectrum
20 p3850 N69-35376

Radio frequency probe of thermal ionization rate in high temperature nitrogen
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Vibrational spectrum analysis of molecular bands in nitrogen transition states
21 p3940 N69-36149

Isotopic exchange reactions induced by alpha particles in hydrogen and nitrogen gases
21 p4054 N69-36240

Molecular biology of nitrogen fixing nodules in common legumes
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Viscosity measurement of high pressure nitrogen
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Microprobe analysis of phases in niobium-nitrogen alloys using electron beam techniques
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Electron excitation of first positive nitrogen bands and first negative and Meinel bands of nitrogen
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Kinetic reaction of nitrogen with uranium monocarbide
[ORNL-TR-2125] 23 p4336 N69-39766

Viscosity measurements by absolute method of argon, helium, hydrogen, and nitrogen for Project Squid
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Nitrogen degassing process for determining oxygen content in powdered carbides of uranium and high temperature transition metal carbides
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Oxygen and nitrogen determination methods for niobium and tantalum powders
24 p4587 N69-40686

Dislocation-interstitial interaction in niobium-nitrogen system
24 p4527 N69-41320

NITROGEN COMPOUNDS
NT ALUMINUM NITRIDES
NT AMIDES
NT AMMONIA
NT AMMONIUM NITRATES
NT AZIDES [INORGANIC]
NT AZIDES [ORGANIC]
NT AZO COMPOUNDS
NT BERYLLIUM NITRIDES
NT BORON NITRIDES
NT CARBAMIDES
NT CELLULOSE NITRATE
NT COLCHICINE
NT CYANO COMPOUNDS
NT DINITRATES
NT FOLIC ACID
NT GUANINES
NT HYDRAZINIUM COMPOUNDS
NT HYDRAZOIC ACID
NT HYDROGEN CYANIDES
NT HYOSCINE
NT IMIDES
NT IMINES
NT ISOCYANATES
NT LIQUID AMMONIA
NT NICOTINE
NT NITRATE ESTERS
NT NITRATES
NT NITRIC ACID
NT NITRIC OXIDE
NT NITRIDES
NT NITRITES
NT NITRO COMPOUNDS
NT NITROAMINES
NT NITROBENZENES
NT NITROGLYCERIN
NT NITROSO COMPOUNDS
NT NITROUS OXIDES
NT OXAMIC ACIDS
NT PETN
NT PHOSPHONITRILES
NT POLYIMIDES
NT POTASSIUM NITRATES
NT RDX
NT SILICON NITRIDES
NT SILVER NITRATES
NT SODIUM NITRATES
NT THIOUREAS
NT THYMINE
NT TITANIUM NITRIDES
NT TRINITROTOLUENE
NT URACIL
NT UREAS
NT URIC ACID
NT ZIRCONIUM NITRIDES

Synthesis of selected derivatives and metal chelates of phosphorus-nitrogen reagents
[AD-676650] 03 p0429 N69-13657

Properties and chemical reactions of new hypofluorites containing nitrogen
[AD-676878] 03 p0429 N69-13683

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04 p0617 N69-14201

Vibrational analysis and structure of nitrogen compounds
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Infrared spectra and approximations of valence vibrations in nitrogen-halogen compounds
05 p0776 N69-15040

Vibration, absorption, and reflection spectra of azido-metal complexes of transition metals and phosphine azide compounds
05 p0781 N69-15318

Synthesis of iron and cobalt complexes with ligands containing silicon-nitrogen bonds and molecular structure analysis of organosilicon ketimines by nuclear magnetic resonance
[AD-679199] 06 p0950 N69-17018

Formation of nitrogenous heterocycles after X ray irradiation of aqueous solutions of aliphatic amines and amino acids
[NASA-TT-F-12091] 06 p0951 N69-17101

Nitrogen effects on radiation injuries of neutron irradiated seeds
08 p1267 N69-18391

Metal-halogen and metal-nitrogen bond vibration investigations using infrared spectroscopy and coordination chemistry
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Nitrogen compounds excretion from whole-body gamma irradiated rat large intestine in absence of stress
[NIIS-R-544] 10 p1630 N69-21146

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[NASA-TT-F-12019] 10 p1648 N69-21242

Bioclimatic effects on ecological cycle of ash elements and nitrogen in desert soils of Asia
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Intensity of aerobic destruction of cellulose in relation to nitrogen compound composition of Gorno-Altai soils
12 p2036 N69-24160

Kinetics of synthesis and decomposition reactions of ionic compounds containing N and F cations
[AD-682497] 13 p2254 N69-24882

Nitrilotriacetic acid as replacement for diethylenetriaminepentaacetic acid in ion exchange purification of promethium
[BNWL-SA-1493] 13 p2259 N69-25551

Radioprotective properties of heterocyclic nitrogenous compounds on serum proteins of irradiated mice
[CEA-R-3679] 14 p2451 N69-26505

Synthesis of pyrrone polymers by reactions of dianhydride end diacetonamido diamines or with tetramine
[NASA-CR-66693] 14 p2548 N69-27351

Radiochemical polymerization in solid state monocrystals of tetrosane using electron microscope and diffraction
[BNL-TR-256] 14 p2478 N69-27510

Electronic structure of anthraquinone and electron spin resonance spectra of electrochemically generated radical anion of nitrogen heterocyclic compounds
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Mass spectra and molecular weights of organic nitrogen compounds subject to thermal decomposition
[JUL-570-PC] 17 p3108 N69-30628

Radioprotective properties of some heterocyclic nitrogenous compounds against spectral modifications in hemoglobin of X irradiated mice
[CEA-R-3688] 18 p3310 N69-32586

Infrared spectra of organic nitrogen compounds
[AD-685898] 18 p3330 N69-32961

Gamma ray effects on chemical stabilization of nitrogen compounds in air-water systems
[BNL-13692] 24 p4515 N69-40035

NITROGEN DIOXIDE

Nitrogen dioxide gas and nitrogen tetroxide corrosion studies of cryopanel materials for space chamber propulsion testing
[AD-676031] 02 p0312 N69-12218

Nitrogen dioxide chemiluminescent wake radiation intensity measurements
[AD-675529L] 02 p0202 N69-12399

Ignition mechanism of hydrazine-nitrogen dioxide hypergolic propellant system
[NASA-CR-100387] 09 p1586 N69-20196

Nitrogen dioxide fluorescence kinetics
[PB-182199] 13 p2261 N69-25611

Colorimetric personal dosimeter for nitrogen dioxide detection
[AD-686423] 17 p3102 N69-31494

Hydrogen bond and frequencies of valence oscillations of N- H- and nitrogen dioxide groups of nitroanilines
[AD-686085] 18 p3325 N69-32628

Photochemical reactions of nitrogen dioxide and organic compounds in polluted air
[NASA-CR-105672] 21 p3942 N69-36380

NITROGEN FLUORIDES

Thermodynamic performance of rocket propellants system methane/nitrogen trifluoride
[DLR-MITT-68-25] 09 p1586 N69-20263

Thermodynamic performance of rocket propellants system methane/nitrogen trifluoride
[DRL-MITT-68-26] 09 p1587 N69-20275

Metabolism, pharmacology, and toxicology of inorganic and fluorine containing compounds
[AD-681161] 09 p1460 N69-20358

Thermodynamic calculations of methane/nitrogen trifluoride rocket propellants system performance
[DLR-MITT-68-23] 10 p1767 N69-21243

Chemistry of inorganic nitrogen fluorides and ammonium salt fluorination
10 p1653 N69-21686

Theoretical thermodynamic data and calculations of performance of methane-nitrogen trifluoride rocket propellant system
[DLR-MITT-68-22] 11 p2012 N69-22415

Explosive reaction between nitrogen fluorine compounds and hydrogen
[AD-687266] 19 p3522 N69-33248

NITROGEN HYDRIDES

Gamma radiolysis of gaseous ammonia
03 p0421 N69-12647

NITROGEN IONS

Metastability calculations of energy states of nitrogen negative ion
[NASA-CR-73272] 01 p0031 N69-10710

Effect of collisions on generation of harmonics in nitrogen subjected to alternating electric field
04 p0711 N69-14146

Electron scattering from molecular nitrogen ions
11 p1941 N69-21988

NITROGEN ISOTOPES

Model for vaporization kinetics of aluminum nitride through analysis of Knudsen cell nitrogen isotope exchange reactions
[AD-676298] 03 p0431 N69-13886

Measurement of differential cross sections for elastic and inelastic scattering of protons by N 14
04 p0706 N69-13925

Isotope separation research
[CU-755-5] 05 p0783 N69-15515

Analysis of low energy reactions of isotopes of nitrogen and isotopes of beryllium and lithium
08 p1378 N69-18529

Chemical effects of nuclear reaction nitrogen-14 /neutron-proton/ carbon-14 in nitrogenous compounds
[COO-1620-3] 13 p2286 N69-26048

Chemical forms of radiocarbon produced by reaction N-14/n,p/C-14 in beryllium, magnesium, calcium, aluminum, and zirconium nitrides
[NP-TR-1746] 18 p3332 N69-33185

Many body reactions with Li 6 production in negative pion capture by C 12, N 14, and O 16 nuclei
[JINR-E1-4492] 24 p4644 N69-41215

NITROGEN OXIDES
NT NITRIC OXIDE
NT NITROUS OXIDES

Examination of feasibility of using dual temperature process for nitrogen isotope concentration
[NYO-3462-6] 01 p0034 N69-10878

Gas phase studies in electron paramagnetic resonance
06 p0941 N69-16526

Continuous monitoring of diesel exhaust gas for carbon dioxide, carbon monoxide, oxygen, methane, and nitrogen oxides
[BM-RI-7241] 08 p1438 N69-19153

Liquid-solid equilibria in ternary system sulfur trioxide-nitrogen pentoxide-water and infrared spectra of sulfonitric compounds
11 p1827 N69-22355

Preparation and physico-chemical properties of nitroxide radicals studied by isotopic labeling
[CEA-R-3642] 11 p1833 N69-22434

Effect of vertical eddy transport on distribution of neutral nitrogen components in D region
[AD-682757] 12 p2111 N69-24542

Source of 4 micron radiation band in high temperature air
[AD-682506] 13 p2258 N69-25376

Spectrophotometric determination of nitrates and gas chromatographic analysis of nitrogen oxides and primary amines
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Radiation-induced decomposition of potassium nitrogen oxide crystals
15 p2676 N69-27848

Electronically excited species by photolysis of nitrogen oxide and application to atmospheric physics
[AD-684329] 15 p2689 N69-28852

Infrared chemiluminescence from reactions of nitrogen oxides with atomic nitrogen
16 p2892 N69-29059

Flash photolytic kinetics of nitrogen oxide free radical in aqueous nitric acid solution
16 p2895 N69-29177

Oscillator strengths of electron transitions between Rydberg states of nitric oxide in near infrared spectra
[AD-687598] 19 p3525 N69-33567

Carbon compound additions to nitrogen oxides for chemiluminescence and chemi-ionization study
[AD-687432] 19 p3533 N69-34141

Radiolysis of carbon dioxide, nitrogen oxides, nitrogen, and oxygen gases
[RPI-321-19] 20 p3749 N69-35078

Vacuum ultraviolet absorption spectrum of nitrogen oxides
[AD-689398] 22 p4121 N69-37217

Preparation and study of dialkyl nitroxide radicals
[CEA-R-3687] 22 p4131 N69-38038

Mass spectra of nitric oxide afterglows
[AD-690192] 23 p4333 N69-39568

Equations for air-like discharges and reactions of ionospheric importance
[AD-690816] 24 p4520 N69-40531

NITROGEN PLASMA

Measurement of excitation and electron temperature in nitrogen plasma
[AD-675210] 02 p0354 N69-12022

Wall-stabilized arc for spectroscopic studies of departures from local thermodynamic equilibrium in argon and nitrogen plasmas at reduced pressures
[NASA-CR-73456] 06 p1051 N69-16856

Diagnostic methods developed for seeded air and nitrogen plasmas
[AD-679330] 07 p1203 N69-17370

Numerical calculations of properties of axially symmetric arc columns
[ARC-R/M-3580] 14 p2604 N69-26432

Spectroscopic analysis of magnetically confined nitrogen plasma column
[AD-690874] 23 p4455 N69-39703

NITROGEN POLYMERS

Thermal degradation of aromatic imides
[RAE-TR-68147] 04 p0625 N69-14856

NITROGEN TETROXIDE

Sampling and analytical procedure for nitrogen tetroxide and mixed oxides of nitrogen
[NASA-CR-97491] 01 p0025 N69-10292

Nitrogen dioxide gas and nitrogen tetroxide corrosion studies of cryopanel materials for space chamber propulsion testing
[AD-676031] 02 p0312 N69-12218

Liquid rocket acoustic instability for hydrogen-oxygen and earth storable propellant combinations
[NASA-TN-D-4968] 04 p0734 N69-14384

Measurement of heat release rate for liquid phase reaction of nitrogen tetroxide and hydrazine
[NASA-CR-73680] 06 p0906 N69-16737

Study of chemical reactivity mechanism of nitrogen tetroxide with titanium alloys
[NASA-CR-98363] 10 p1643 N69-20871

Corrosive chemical interactions of nitrogen tetroxide and titanium alloy
[NASA-CR-102204] 17 p3112 N69-31360

NITROGEN 15

Comparative study of /p,3/ and /p,He-3/ reactions on N-15 and C-13 targets
07 p1194 N69-17870

Energy levels in nitrogen 15 resulting from proton capture of carbon 14
[COO-1120-75] 08 p1390 N69-19040

Gamma ray decay in fluorine 19 from alpha particle capture in nitrogen 15
[COO-1120-73] 08 p1393 N69-19160

Hydrogen-oxygen 18 and nitrogen 15-hydrogen cold target techniques
[UR-NSRL-13] 12 p2172 N69-23747

Nuclear state parity and energy level lifetime determinations in nitrogen 15 nuclear reactions
[COO-1120-78] 12 p2184 N69-24654

NITROGLYCERIN

Role of loading shock wave in spread of slow speed detonation in liquid nitroglycerin charges
[HLL-M-7479-/5428.4F/]
08 p1440 N69-19359

Ignition times of two nitroglycerin explosives measured in flow of hot nitrogen-air gas
[TL-1918-4] 16 p1794 N69-21413

NITROSO COMPOUNDS

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NT CESIUM OXIDES
NT CHLORINE OXIDES
NT CHROMIUM OXIDES
NT COBALT OXIDES
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NT MAGNETITE
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NT METAL OXIDES
NT MOLYBDENUM OXIDES
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NT NIOBIUM OXIDES

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NT NITROGEN DIOXIDE
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U RADIATION COUNTERS

PARTICLE DECAY
U RADIOACTIVE DECAY

PARTICLE DENSITY (CONCENTRATION)
NT ELECTRON DENSITY (CONCENTRATION)
NT ELECTRON DENSITY PROFILES
NT ELECTRON DISTRIBUTION
NT ION DENSITY (CONCENTRATION)
NT IONOSPHERIC ELECTRON DENSITY
NT IONOSPHERIC ION DENSITY
NT MAGNETOSPHERIC ELECTRON DENSITY
NT MAGNETOSPHERIC ION DENSITY
NT MAGNETOSPHERIC PROTON DENSITY
NT PLASMA DENSITY
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U RADIATION COUNTERS

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NT ELECTRON DIFFUSION

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NT ELECTRON EMISSION
NT FIELD EMISSION
NT ION EMISSION
NT NEUTRON EMISSION
NT PHOTOELECTRIC EMISSION
NT SECONDARY EMISSION
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U FLUX [RATE]

PARTICLE FLUX DENSITY

NT ELECTRON FLUX DENSITY
NT NEUTRON FLUX DENSITY
NT PROTON FLUX DENSITY

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NT ELECTRON CAPTURE
NT ION ATOM INTERACTIONS
NT MOLECULAR COLLISIONS
NT MOLECULAR INTERACTIONS
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NT NUCLEAR INTERACTIONS
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NT NUCLEOTIDES
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U ELASTIC WAVES

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U PITOT TUBES
U SPEED INDICATORS

PRESTRAINING
U PRESTRESSING

PRESTRESSING

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U PRESTRESSING
U TWISTING

PREVENTION
U ACCIDENT PREVENTION
U CORROSION PREVENTION
U FIRE PREVENTION

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NT DRY CELLS
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NT ELECTRON FLUX DENSITY
NT ILLUMINANCE
NT IRRADIANCE
NT LUMINANCE
NT LUMINOUS INTENSITY
NT NEUTRON FLUX DENSITY
NT PARTICLE FLUX DENSITY
NT PROTON FLUX DENSITY
NT RADIANCE
NT RADIANCY
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NT ELECTRON COUNTERS
NT GEIGER COUNTERS
NT NEUTRON COUNTERS
NT NEUTRON SPECTROMETERS
NT PARTICLE TELESCOPES
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U FALLOUT
U PARTICLES

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NT AMERICIUM 241
NT BERKELIUM
NT BERYLLIUM 7
NT BERYLLIUM 9
NT BERYLLIUM 10
NT CALIFORNIUM
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NT CERIUM
NT CERIUM ISOTOPES
NT DYSPROSIUM
NT DYSPROSIUM ISOTOPES
NT ERBIUM
NT ERBIUM ISOTOPES
NT EUROPIUM
NT EUROPIUM ISOTOPES
NT GADOLINIUM
NT HOLMIUM
NT HOLMIUM ISOTOPES
NT LANTHANUM
NT LANTHANUM ISOTOPES
NT LUTETIUM
NT LUTETIUM ISOTOPES
NT NEODYMIUM
NT PRASEODYMIUM
NT PROMETHIUM
NT PROMETHIUM ISOTOPES
NT SAMARIUM
NT SCANDIUM
NT SCANDIUM ISOTOPES
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NT YTTERBIUM
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NT ARGON
NT ARGON ISOTOPES
NT HELIUM
NT HELIUM ATOMS
NT HELIUM FILM
NT HELIUM ISOTOPES
NT KRYPTON
NT LIQUID HELIUM
NT LIQUID NEON
NT NEON
NT NEON ISOTOPES
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NT XENON 133
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NT COSMIC GASES
NT INTERPLANETARY GAS
NT INTERSTELLAR GAS

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NT COSMIC PLASMA
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RASERS
U MASERS

RATE METERS
U MEASURING INSTRUMENTS

RATES [PER TIME]
NT ACCELERATION [PHYSICS]
NT ACOUSTIC VELOCITY
NT AIRSPEED
NT ANGULAR ACCELERATION
NT ANGULAR VELOCITY
NT ARRHYTHMIA
NT ARTIFICIAL GRAVITY
NT BRADYCARDIA
NT BURNING RATE
NT COLLISION PARAMETERS
NT COLLISION RATES
NT CRITICAL VELOCITY
NT CURRENT DENSITY
NT DECAY RATES
NT DECELERATION
NT DRIFT RATE
NT ELECTRON DECAY RATE
NT ELECTRON FLUX DENSITY
NT ESCAPE VELOCITY
NT EVAPORATION RATE
NT EXHAUST VELOCITY
NT FLOW VELOCITY
NT FLUX [RATE]
NT FLUX DENSITY
NT GRAVITATION
NT GROUND SPEED
NT GROUP VELOCITY
NT HEART RATE
NT HEAT FLUX
NT HIGH ACCELERATION
NT HIGH GRAVITY ENVIRONMENTS
NT HIGH SPEED
NT HYPERSONIC SPEED
NT ILLUMINANCE
NT IMPACT ACCELERATION
NT ION PRODUCTION RATES
NT IRRADIANCE
NT LIGHT SPEED
NT LOADING RATE
NT LOW SPEED
NT LUMINANCE
NT LUMINOUS INTENSITY
NT LUNAR GRAVITATION
NT LUNAR GRAVITATIONAL EFFECTS
NT MAGNETIC FLUX
NT MASS FLOW RATE
NT NEUTRON FLUX DENSITY
NT ORBITAL VELOCITY
NT PARTICLE ACCELERATION
NT PARTICLE FLUX DENSITY
NT PHASE VELOCITY
NT PHOTON DENSITY
NT PHYSIOLOGICAL ACCELERATION
NT PLANETARY GRAVITATION
NT PLASMA ACCELERATION
NT PROPAGATION VELOCITY
NT PROTON FLUX DENSITY
NT PULSE RATE
NT RADIANCE
NT RADIANCY
NT RADIANT FLUX DENSITY
NT RECOMBINATION COEFFICIENT
NT REDUCED GRAVITY
NT RELATIVISTIC VELOCITY
NT RESPIRATORY RATE
NT ROTOR SPEED
NT SIGNAL FADING RATE
NT SOLAR CONSTANT
NT SOLAR FLUX
NT SOLAR FLUX DENSITY
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NT SOUND INTENSITY
NT SPIN REDUCTION
NT STRAIN RATE
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NT SUPERSONIC SPEEDS
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U SPACE RATIONS
RATIOS
NT ASPECT RATIO
NT FINENESS RATIO
NT FROUDE NUMBER
NT FUEL-AIR RATIO
NT GRASHOF NUMBER
NT HARTMANN NUMBER
NT HIGH ASPECT RATIO
NT INDEXES [RATIOS]
NT LAVAL NUMBER
NT LIFT DRAG RATIO
NT LOW ASPECT RATIO
NT MACH NUMBER
NT MASS RATIOS
NT NUSSELT NUMBER
NT OPTICAL REFLECTION
NT PAYLOAD MASS RATIO
NT PECLET NUMBER
NT PERVEANCE
NT POISSON RATIO
NT PRANDTL NUMBER
NT REYNOLDS NUMBER
NT RICHARDSON NUMBER
NT SCALE [RATIO]
NT SIGNAL TO NOISE RATIOS
NT SIMILARITY NUMBERS
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NT STRESS RATIO
NT THICKNESS RATIO
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RF- 8 AIRCRAFT
U F- 8 AIRCRAFT

RH- 2 HELICOPTER
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NT DATA TRANSMISSION
NT IONOSPHERIC F-SCATTER PROPAGATION
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NT MICROWAVE ATTENUATION
NT MICROWAVE TRANSMISSION
NT MULTIPATH TRANSMISSION
NT PCM TELEMETRY
NT PULSE FREQUENCY MODULATION
NT PULSE FREQUENCY MODULATION TELEMETRY
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NT RADIO ATTENUATION
NT RADIO TELEMETRY
NT RADIO TRANSMISSION
NT SATELLITE TRANSMISSION
NT SHORT WAVE RADIO TRANSMISSION
NT SINGLE SIDEBAND TRANSMISSION
NT SYLLABLES
NT SYMBOLS
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U SYMBOLS

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SIKORSKY AIRCRAFT
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NT CALCIUM SILICATES
NT ENSTATITE
NT FELDSPARS
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NT ALUMINUM SILICATES
NT CALCIUM SILICATES
NT CHLOROSILANES
NT ENSTATITE
NT FELDSPARS
NT GARNETS
NT KAOLINITE
NT MONTMORILLONITE
NT MUSCOVITE
NT ORGANIC SILICON COMPOUNDS
NT PYROXENES
NT QUARTZ
NT SILANES
NT SILICATES
NT SILICIDES
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U S-2 AIRCRAFT

SNOW AIRCRAFT

U S-2 AIRCRAFT

SNOW S-2 AIRCRAFT

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NT IGNEOUS ROCKS
NT KAOLINITE
NT LAVA
NT LIMESTONE
NT LUNAR DUST
NT LUNAR SOIL
NT MAGMA
NT MOLDAVITE
NT MONAZITE SANDS
NT PERMAFROST
NT POLYURETHANE FOAM
NT POROUS MATERIALS
NT PUMICE
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SONDES

NT DROPSONDES
NT IONOSONDES
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Digital simulation of North Atlantic Ocean traffic flow for Concorde and Boeing 2707 supersonic aircraft
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Sonic boom propagation in stratified atmosphere using FORTRAN computer program with integral and differential equations
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Design method for far field sonic boom shock strength and impulse independent of body length and volume
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[CMERI-A10] 02 p0202 N69-12361

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Directional distribution calculations for sound field of microphone from acoustic measurements
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Acoustical source problems and far field integration methods for jet aircraft noise
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Acoustic emission for nondestructive testing and certification
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Sound absorption in electrolyte solutions due to chemical relaxation
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Sound transmission and acoustic wave propagation in matter - bibliographies
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Sound absorption tests on polyurethane and liquid soap foams for anechoic enclosures
[AD-687919] 19 p3611 N69-34210

NRL progress report on radiation damage in silicon, electronics, oceanography, acoustics, radar echo areas, and arc lamps
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U ACOUSTIC VELOCITY

SOUND WAVES
NT AERODYNAMIC NOISE
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NT ELECTROACOUSTIC WAVES
NT ENGINE NOISE
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Project summaries, activities, and some results of work in hand in Southampton University Sound and Vibration Institute annual report ending June 1968
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[AD-678877] 08 p0994 N69-16933

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Sound wave scattering by fluid cylinders and prolate spheroids, and liquid elliptical lens focusing
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Acoustic wave propagation on surface of hollow and solid elastic cylinders immersed in water
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Expanding axial acoustic wave on submerged circular cylindrical shell
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Digital computation of downstream modes from shock wave interaction with upstream flow containing vorticity, entropy, and sound disturbances
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Downstream flow field produced by interaction of plane sound waves or plane shear waves with oblique shock front
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Light absorption by orientationally disordered crystal sound waves
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Numerical solution of scalar Helmholtz equation in acoustic radiation problems
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Temperature effects on turbofan and turbojet noise radiation
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U SOUNDING

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NT IONOSPHERIC SOUNDING
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Performance of prototype advanced meteorological sounding system radiosondes
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Deep seismic sounding application for studying Central Asia crustal structure
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Aerological ozone soundings over southern Germany
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NT BLACK BRANT 2 SOUNDING ROCKET
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Matching radio telemetry system with system for radar tracking of sounding rocket
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Sounding rocket measurements of daytime energetic electron precipitation in auroral zones
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Satellites and sounding rockets for space research
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Rocket-borne system to measure air-density by detecting Rayleigh scattered light from onboard light source
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Measurement of flux and energy spectra of protons, energetic particles, hydrogen atoms, and electrons in auroral zone by Nike-Tomahawk sounding rocket
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Wind and temperature measurement data from meteorological sounding rockets, and radiosonde observations - February 1968
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Sounding rocket experiments correlated with satellite experiments for complementary measurements of solar radiation, atmospheric absorption, and meteorological events
[TM-SAD-184] 03 p0465 N69-13547

Radiation balance in rocket sonde thermometers
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Final and preflight tests on sounding rocket payloads experiment FU 171 Kerguelen
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AC electric and magnetic fields observed in ionosphere by Javelin sounding rocket
[NASA-CR-99193] 04 p0658 N69-14778

Wind and temperature measurement data from meteorological sounding rockets and radiosonde observations - March 1968
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Progress in ESRO programs comprising sounding rockets experiments and ESRO I and ESRO 2 satellites
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Progress in ESRO sounding rockets and satellites program
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Stability of sounding rocket as function of ogive length and mass
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Propulsion requirements of small rocket motor for D region and meteorological sounding
[NASA-CR-99248] 06 p1059 N69-16392

Ultrahigh frequency telemetry system test flights
[AD-678881] 06 p0956 N69-16782

Meteorological rocket designed for research and range support soundings
[AD-679026] 06 p1068 N69-16807

Development of gun launched rockets
[AD-679353] 06 p1061 N69-17123

Design and performance of test centrifuge for rocket instruments
[ISL-N-17/67] 07 p1128 N69-17239

Electron microscopic analysis of particles caught by sounding rockets for extraterrestrial origin
[NASA-CR-73883] 07 p1097 N69-17777

Relationship between sounding rockets, laser radar, and K band radar data on vertical temperature and humidity in lower atmosphere
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Sounding rocket flight DataDigit system, part of pulse-position-modulation telemetry system
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Theoretical comparison of beads, wires, and films as rocketsonde temperature sensors in mesosphere
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Standard command-support equipment casing for sounding rockets
[CNES-NT-16] 07 p1126 N69-18153

Radio soundings and meteorological soundings on stratospheric winter warmings and springtime reversals in polar regions
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Study and assembling of scientific experiments in sounding rocket payloads
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Application of fluidics to guidance and attitude control of satellites and sounding rockets
[REPT-1012-PR/ED] 08 p1367 N69-18832

European Space Conference - separation systems and flight test of Europa I launch vehicle, and progress in ESRO operational program
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Progress in ESRO satellite and sounding rocket program during 1968
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Design, development, and flight tests of chemical release payloads for upper atmosphere research
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Low frequency rocket propagation experiments during solar eclipse in Brazil
[AD-681885] 10 p1702 N69-21691

Ballute development for Loki dart and Arcas rocket-sondes
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Rocket borne stellar photometers calibration
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Chemical release by sounding rockets for chemical reaction investigation and thermospheric physics tests
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Graphic method determining sounding rocket vehicle attitude
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Nitric oxide airglow in gamma bands measured by sounding rockets
[NASA-CR-100729] 12 p2099 N69-23810

Meteorological and ballistics data for launching of sounding rockets
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VLF electric and magnetic fields observed in auroral zone with Javelin 8.46 sounding rocket
[NASA-CR-100769] 12 p2111 N69-24519

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Costing procurement technique resulting in improved aircraft tires for lowest costs
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Velocity structure in 30-60 km region deduced from paired Robin sounding
[AD-683335] 14 p2564 N69-27173

Attitude measurement instrumentation and data reduction system for measuring orientation attitude of spin stabilized space vehicles
[AD-683860] 14 p2526 N69-27275

Sounding rocket research in upper atmosphere and lower thermosphere using cloud seeding
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NT CALCIUM SULFIDES
NT CARBON DISULFIDE
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NT DISULFIDES
NT ENARGITE
NT HYDROGEN SULFIDE
NT INDIUM SULFIDES
NT INORGANIC SULFIDES
NT LEAD SULFIDES
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NT CALCIUM SULFIDES
NT CARBON DISULFIDE
NT COPPER SULFIDES
NT CYSTEINE
NT DISULFIDES
NT ENARGITE
NT HYDROGEN SULFIDE
NT INDIUM SULFIDES
NT INORGANIC SULFIDES
NT LEAD SULFIDES
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U PRESSURE

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NT ADSORPTIVITY
NT COEFFICIENT OF FRICTION
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NT CRITICAL PRESSURE
NT CRITICAL TEMPERATURE
NT EMISSIVITY
NT ENTHALPY
NT ENTROPY
NT FREE ENERGY
NT GIBBS FREE ENERGY
NT HEAT OF COMBUSTION
NT HEAT OF FORMATION
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NT MELTING POINTS
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TURBOCOMPRESSORS

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U TRAVELING WAVE TUBES
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VACUUM TUBES
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U DOLPHINS
U FISHES
U FROGS
U GUINEA PIGS
U HAMSTERS
U HORSES
U HUMAN BEINGS
U MAMMALS
U MANGABEYS
U MICE
U MONKEYS
U PIGEONS
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YJ-85 ENGINE

U J-85 ENGINE

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Temperature dependence and anisotropy of magnetization of ytterbium orthoferrite
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Energy and structure levels of ytterbium 169 determined by radiative capture of thermal neutrons in ytterbium 168
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Deformed heavy nuclei comparison study by nuclear reactions of ytterbium
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[JINR-P6-3945] 01 p0138 N69-10[illegible]

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[CNEA-214] 05 p0879 N69-13[illegible]

Synergistic effect in extraction of yttrium and americium with ketone
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Magnetic properties of single crystals of erbium and some yttrium-erbium and lutetium-erbium alloys between 1.2 and 300 deg K
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Oxidation resistance of chromium-yttrium alloys
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NT YTTRIUM-ALUMINUM GARNET
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05 p0891 N69-15362

Mathematical method for calculating exchange constants and sublattice magnetization of yttrium-iron garnets
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Z AXIS
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[NASA-TN-D-5193] 12 p2018 N69-23926

Turbulent separated boundary layer flow studied using high forward facing steps with zero angle of attack
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Critical mass measurements and reactivity coefficient of heavy water in fast reactor FRO core
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Fuel development, operation, and safety studies for LMFBR, ZPR-3, and ZPPR during August 1968
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Coincidence technique for nondestructive measure of neutron capture rate of U-236 foil in zero power fast reactor
05 p0850 N69-15048

Uranium reaction rate measurements in steam cooled fast zero power reactor
[EURFNR-565] 07 p1177 N69-17630

Reactor technology developments for Zero Power Reactor 3, ZPPR, and Experimental Breeder Reactor 2
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Critical experiments for GKN Dodewaard Nuclear Power Station performed in KRITO facility of RCN at Petten
[RCN-102] 09 p1553 N69-19603

Reactor development program including experimental breeder reactor 2, zero power reactors, reactor safety, and nuclear fuel development
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[KAPL-M-6965] 12 p2155 N69-24087

Applications of small semiconductors to direct measurement of neutron flux in reactor core in zero power experiments
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Zinc-air secondary batteries with inorganic separators
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Hydrostatic pressure effects on self diffusion rates in zinc
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[ITEF-595] 07 p1196 N69-18081

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Energy level structure of zinc in magnetic fields using single band effective Hamiltonian
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High rate primary zinc air battery tested, and plastic frames investigated as intercell separators
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Tests and activated storage studies for high rate primary zinc air battery development
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Electrode materials investigation for alkaline batteries
[NASA-CR-100437] 10 p1626 N69-21172

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Kohn anomalies and lattice dynamics in zinc studied by neutron inelastic scattering
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Nuclear magnetic resonance frequencies of Cd and Zn isotopes with optical pumping technique
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Thin single crystal piezoelectric films deposition of ZnO for conversion of electromagnetic microwave energy to phonon energy
[AD-687134] 18 p3462 N69-32542

Photoionization with atomic beams and vacuum ultraviolet radiation on zinc and cadmium atoms
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Degree of order and thermodynamic properties of beta phase in zinc-gold system
[NRC-TT-1372] 23 p4488 N69-38652

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Phase studies on binary niobium-zinc alloys
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[AD-679610] 07 p1155 N69-17837

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Effect of varied extrusion temperature on properties of zinc-copper-titanium alloy
[BM-RI-7229] 08 p1353 N69-19240

Fatigue crack growth and propagation in zinc and niobium alloy pressure tubing
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Strengthening theory for quantitative shear stress analyses on zonal states of aluminum zinc alloys
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Superplasticity in zinc-aluminum alloys
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Free electron concentration effect on zinc thermodynamic activity in silver-zinc alloys
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Precipitate strengthening mechanism in magnesium zinc alloys, and inhibition of twinning fracture
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Mo-Zn and Nb-Zn alloys subjected to microscopy, thermal analysis, and X rays
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Mechanism of superplasticity in aluminum-zinc alloys
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Space environment simulation tests to determine neutral charge low energy particle irradiation effects on spacecraft aluminum and zinc thermal control coatings
[NASA-CR-73290] 06 p1013 N69-16965

Ferrocyanide and ferricyanide additives for prevention of optical degradation of coatings by ultraviolet radiation and vacuum
[NASA-CR-100210] 08 p1356 N69-19361

S-13G type thermal control coatings for space applications
[NASA-CR-100771] 12 p2132 N69-24390

ZINC COMPOUNDS
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Optical 2 electrical properties of ZnSiAs2
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[AD-679636] 07 p1211 N69-17744

Induction plasma heating techniques used to calcinate pigment particles for thermal control coatings
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Spin resonance studies of zinc orthotitanate, synthesis of new pigments, and design of new test facility for developing space-stable, thermal control coatings
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Reactive encapsulation methods for thermal stabilization of zinc orthotitanate resin paints for spacecrafts materials
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Determination of oxygen parameters in zinc ferrite by neutron diffraction
[NP-667] 19 p3676 N69-33892

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Chemical properties of lanthanum germanium compounds
01 p0028 N69-10418

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17 p3230 N69-30587

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Mechanisms of solar radiation damage to optical properties in zinc oxide pigments in visible and infrared regions
[NASA-CR-98174] 03 p0483 N69-13059

Ultraviolet degradation of zinc oxide thin films
[NASA-CR-98164] 03 p0495 N69-13620

Low energy electron diffraction studies of /0001/ surfaces of cadmium sulfides and zinc oxides
04 p0729 N69-14199

Electrical conductivity changes of zinc oxide catalyst during chemisorption and catalytic oxidation of carbon monoxide
[AD-678384] 05 p0787 N69-15941

Absorption and desorption of oxygen by zinc oxide film irradiated by ultraviolet light
[NASA-CR-99237] 06 p0998 N69-16650

Photoemission, optical absorption, and photocurrent probes for analyses on electrical properties of zinc oxide
08 p1287 N69-18732

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12 p2163 N69-23714

S-13G type thermal control coatings for space applications
[NASA-CR-100771] 12 p2132 N69-24390

Electrochemical kinetics of spectral sensitization and photochemical reactions at zinc oxide electrodes
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Effects of chemisorbed oxygen, carbon dioxide, and carbon monoxide on electrical properties of zinc oxide single crystals
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Single crystal solid-liquid interface studies of titanium and zinc oxide suspensions
[AD-683601] 14 p2464 N69-26535

Electrophotographic properties of dielectric resin surface containing zinc oxide
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Oxidation catalysis and absorbed state of oxygen on zinc oxide
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Preparation of zinc oxide pigmented methyl silicone coating for thermal protection of space flight structures
[NASA-CR-102216] 17 p3182 N69-31335

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Copper oxide additives for improving antifouling properties of silicate zinc protective coatings
[AD-688536] 22 p4206 N69-38493

Performance of sintered zinc oxide electrodes for secondary batteries
[NASA-CR-72593] 24 p4504 N69-40063

ZINC SELENIDES

Gaas, frequency and temperature dependence in heterojunction transistors of GaAs, ZnSe, and Ge
[NASA-CR-97737] 01 p0049 N69-10733

OPW energy band calculations for cubic ZnS, ZnSe, CdS, and CdSe
[AD-677026] 04 p0731 N69-14837

Semiconductor heterojunction structure and growth of zinc selenide single crystals
[AD-681173] 09 p1585 N69-20328

Photoelectronic properties of ZnSe-Cu crystals
10 p1762 N69-20764

Growth and electrical and optical properties of zinc telluride, self diffusion in zinc selenide and high temperature defect structure of cadmium telluride
[SU-283-6] 11 p2013 N69-23119

Fabrication and properties of gallium arsenide and zinc selenide junctions with germanium, and of gallium arsenide-zinc selenide heterojunctions
[NASA-CR-101139] 14 p2611 N69-26281

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ZINC SULFIDES
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Photovoltaic conversion studies on promethium 147-zinc sulfide compounds
[BMWF-FBK-68-07] 03 p0425 N69-13146

OPW energy band calculations for cubic ZnS, ZnSe, CdS, and CdSe
[AD-677026] 04 p0731 N69-14837

Cross relaxation in electron nuclear double resonance spectrum of paramagnetic vanadium oxide in diamagnetic zinc crystal
07 p1113 N69-18234

Electron spin resonance studies on photoexcited zinc sulfide phosphors
12 p2046 N69-23432

Real time sampling of zinc sulfide tracer in diffusion studies
12 p2099 N69-23813

Electron bombardment conductivity of thin zinc sulfide films
14 p2618 N69-27366

Frozen polarization of electroluminescent zinc sulfide crystals
[AD-684628] 15 p2831 N69-28360

Thermal expansion of zinc sulfide and bibliography on thermal expansion of groups IIB-VIB elements
[AD-684559] 15 p2834 N69-28828

Impact ionization and tunneling effect during electroluminescence of zinc sulfide
[NASA-TT-F-12405] 17 p3242 N69-31395

Thermal expansion of wurtzite, zinc sulfide, and wurtzite phase of cadmium selenides
[AD-691063] 23 p4459 N69-39869

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Crystal growth purification methods for cadmium selenides, cadmium sulfides, and zinc tellurides
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ZIRCALOY 2 [TRADEMARK]

Halden boiling water reactor operations summary
[HPR-102] 03 p0508 N69-13042

Zircaloy-clad uranium dioxide fuel rod evaluation program
[GEAP-5624] 04 p0695 N69-14665

Acoustic emission of Zircaloy-2 during tensile and fatigue testing at room temperature
[BNWL-727] 05 p0837 N69-15761

Zircaloy-clad uranium dioxide fuel rod evaluation
[GEAP-5867] 06 p1033 N69-17180

Corrosion of zirconium alloy samples in hot circulating water before and after decontamination treatment
[KCN-100] 08 p1351 N69-18837

Corrosion and failure characteristics of Zircaloy 2, Ozhennite, and zirconium crystal bar in high pressure steam in temperature range 400 to 500 degrees C
[BNWL-SA-1929-PT-2-REV] 09 p1528 N69-19633

Texture influence on mechanical properties of Zircaloy 2 with stress oriented hydrides
[BARC-367] 12 p2126 N69-23841

Available reactor facilities for fast neutron irradiation studies of Zircaloy 2 and niobium zirconium pressure tubes
[BNWL-872] 12 p2156 N69-24092

Reactor safety tests with Zircaloy 2 clad uranium oxide pellets in SPERT 4, and in unplanned power excursions in SPERT 3 core
[IDO-17289] 13 p2369 N69-25999

C axis texture of cold worked Zircaloy 2 in pressure tubes
[RD/B/N-1240] 13 p2340 N69-26007

Design and failure analysis of Zircaloy 2 clad urania fuel elements for SPERT reactors
[IDO-17294] 14 p2568 N69-27217

Protective coatings for Zircaloy 2 to shield from hydrogen
[EUR-4098.E] 14 p2543 N69-27248

Design, specifications, fabrication, and strength of Zircaloy 2 pressure tubing for use in heavy water reactors
[BNWL-746] 15 p2803 N69-27803

Thermal treatment effects on alloy component distribution of Zircaloy 2
[WAPD-TM-818] 18 p3392 N69-32833

Metallographic study and identification of zirconium hydrides in Zircaloy tube specimens
[JEN-199-DME/I-19] 19 p3603 N69-33930

Welding of Zircaloy 2 - bibliographies
[JEN-200-DME/I-20] 20 p3814 N69-35684

ZIRCALOYS [TRADEMARK]
NT ZIRCALOY 2 [TRADEMARK]

In-reactor performance of defected Zircaloy-clad uranium silicate fuel elements in pressurized and boiling water coolants
[AECL-3106] 01 p0119 N69-11025

Failure modes of Zircaloy-clad uranium dioxide fuel rods
[ORNL-TM-2347] 03 p0511 N69-13205

Directional strain and hydride orientation in Zircaloy reactor tubing
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U REGIONS

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